boiling temperatures below 2000° and evaporation heats below 60 k kcal/g-atom. These clouds are wedge-shaped and extend from the cathode to the anode. During the flash the voltage drop between the electrodes is superposed by oscillations of different frequencies and large amplitudes (for strongly mobile cathode spot, Bi, Pb, Sb, Pt) or small amplitudes (for immobile cathode spot, W, Al). These fluctuations are probably due to changes in the anode drop of the potential. The shape of the electrodes determines the space structure of the electric field between them, the nature of the evaporation processes, the charged particle and excited atom distribution in the luminescent cloud, and hence the shape of the cloud. There are 3 figures and 1 table.

Card 2/2

S/194/62/000/006/185/232
D/201/D308

AUTHOR: Turko, L.N.

TITLE: Interdependence of the evaporation and ionization processes in an arc discharge

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, 58, abstract 6Zh373 (V sb. Nekotoryye vopr. emission. i molekulyarn. spektroskopii, Krasnoyarsk, 1960, 42-52)

TEXT: Certain laws related to the distribution of ions and neutral atoms in the interelectrode space of a low intensity a.c. arc were investigated. The measurements have shown that the ionization of atoms in the plasma of an arc discharge is determined by the temperature and the composition of plasma, which depends on the physico-chemical properties of electrodes and the character of the processes of evaporation at the surfaces of anode and cathode. Owing to this, the degree of ionization of atoms in the positive column depends on where they evaporate from - from the cathode or anode. The observed changes in ionization were due to different degrees of

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evaporation from the pure metal anode and from an anode made of an alloy with iron. The ionization of atoms in the plasma depends on the conditions of transition of the electrode material from the solid to gaseous phase. In the regions near the electrodes, where the thermodynamic equilibrium is upset, the degree of ionization of atoms begins to be affected by the increasing intensity of the electric field. The processes occurring at the arc electrodes and in the plasma cord of the arc discharge, the processes of evaporation and ionization - represent a single set of phenomena. [Abstracter's note: Complete translation.]

40166
S/058/62/000/007/054/068
A062/A101

26.2311

AUTHOR: Turko, M. N., Korshakevich, I. I.

TITLE: Some results of probe investigations of an alternating current arc

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1962, 56, abstract 7Zh374 (In collection: "Nekotoryye vopr. emission. i molekulyarn. spektroskopii", Krasnoyarsk, 1960, 34 - 41)

TEXT: A study on some properties of the alternating current arc in the air at the atmospheric pressure was made with the aid of a rotating probe. The method of Langmuir's probes as applied to discharges at the atmospheric pressure enables one to measure only the potential of the plasma (on the basis of the inflection point on the logarithmic curve of the current). The probe was made in the form of a nichrome wire with a diameter of 0.12 mm, rotating with a speed of 3,000 rpm. At a given moment the wire crossed the arc column. All the measurements pertained to any one phase. By this method the potential distribution along the arc column was determined. Both the probe and the spectral measurements give evidence of the existence of a positive space charge on both electrodes, i.e. an

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increase of the ion concentration. The value of the cathode drop (18 v) is in agreement with the data for the direct current arc. The value of the anode drop (17 v) requires an additional explanation. A study was also made on the effect of the current intensity (up to 20 a) and of the material of the electrodes on the diameter of the electron and ion columns. In that study the rotating probe was submitted to a potential equal to the potential of the anode or the cathode, respectively. For Pt, Pd and Cu the diameter of the electron cloud considerably exceeds the ion column, whereas for Al and Zn the difference of the diameters is small. This result may be explained by the different magnitude of the electron diffusion in the radial direction, the diffusion depending on the radial potential distribution of the plasma as well as on the concentration of the charged particles in the arc column. There are 11 references.

Yu. Knizhnikov

[Abstracter's note: Complete translation]

40167
S/058/62/000/007/065/068
A062/A101

24.6710

AUTHORS: Turko, M. N., Il'ohenko, V. N.

TITLE: The effect of the material of the electrodes on the field strength in an arc

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7,1962, 56, abstract 7Zh377 (In collection: "Nekotoryye vopr. emission. i molekulyarn. mikroskopii". Krasnoyarsk, 1960, 53 - 61)

TEXT: The strength of the electric field E in the positive column of an alternating current arc between different electrodes was investigated. The value of E was determined as the slope angle of the rectilinear portion of the function of the interelectrode potential drop U versus the arc length, while maintaining constant the amplitude of the current pulse (I = 6.7 a) and the duration of the flash (7 msec). Measurements carried out with electrodes of 12 different metals (Al, Bi, Sn, Pb, Ag, Ni, Cu, Pd, Pt, Cd, Zn, C) have shown that E increases with the rise of the ionization potential of the electrode material U_i. From the inclination of the straight line lg E = f(U_i) the effective temperature (11,000°K)

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S/058/62/000/007/065/068
A062/A101

The effect of the material of the...

is determined. Measurements of the magnitude E at different polarities of the electrodes (one of which was made of graphite) have shown that E is determined chiefly by the properties of the anode material.

Z. Kobina

[Abstracter's note: Complete translation]

Card 2/2

TURKO, M.N.; KORSHAKEVICH, I.I.

Some regularities of substance evaporation from the surface of a sonde in arc discharge. Izv. SO AN SSSR no. 10. Ser. tekh. nauk no. 3:63-70 '65 (MIRA 19:1)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk. Submitted February 25, 1963.

ACC NR: AP6026303 SOURCE CODE: UR/0288/66/000/001/0045/0052

AUTHOR: Turko, M. N.; Kravchenko, T. A.

ORG: Institute of physics, Siberial Department, AN SSSR, Krasnoyarsk (Institut fiziki Sibirskogo otdeleniya AN SSSR)

TITLE: Effect of light absorption in an arc on spectral line intensity

SOURCE: AN SSSR. Sibirskoye otdeleniya. Izvestiya. Seriya tekhnicheskikh nauk, no. 1, 1966, 45-52

TOPIC TAGS: spectral line intensity, light absorption, plasma arc

ABSTRACT: The effect of light absorption in a plasma arc on the intensity of the emitted spectral lines is examined. It is shown that for an inhomogeneous light source, such as a plasma arc, the absorption problem can be reduced to the determination of the value of the relative absorption of a line $\varphi = I_\ell / I_\ell^0$ (where I_ℓ is the observed integral intensity of the line and I_ℓ^0 is the line intensity in the absence of self-absroption). A method for determining relative absorption is proposed which, instead of the Cowan-Dieke excitation function, makes use of a radial temperature distribution function, T(r), and of an absorbing-atom concentration function, $n_a(r)$, each of which can be readily determined from experiments. The analysis leads to an expression for the relative line absorption in a plasma arc, in the form

 UDC: 621.3.014.31:535.34 543.420.62

$$\varphi(a, p, \beta_a, \gamma) = \frac{1}{\sqrt{\pi}}\left\{F_1(a, p) + \frac{p}{H(a, 0)} \cdot F_2(a, p) \cdot f_1(\beta_a, \gamma) + \right.$$

$$\left. + \frac{1}{\pi}\left[\frac{p}{H(a, 0)}\right]^2 \cdot F_3(a, p) \cdot f_2(\beta_a, \gamma) + \cdots\right\},$$

where a is the Voight parameter, p is the absorption parameter, β_a and γ are coefficients characterizing the radial distribution of absorbing and omitting atoms, respectively, F_1, F_2, F_3 are functions in integral form:

$$F_1(a, p) = \int_{-\infty}^{\infty} H(a, v) \cdot \exp\left[-p\frac{H(a, v)}{H(a, 0)}\right] dv,$$

$$F_2(a, p) = \int_{-\infty}^{\infty} [H(a, v)]^2 \cdot \exp\left[-p\frac{H(a, v)}{H(a, 0)}\right] dv,$$

$$F_3(a, p) = \int_{-\infty}^{\infty} [H(a, v)]^3 \cdot \exp\left[-p\frac{H(a, v)}{H(a, 0)}\right] dv,$$

and $f_1(\beta_a,\gamma)$ and $f_2(\beta_a,\gamma)$ are centain elementary functions of the coefficients β_a and γ. This equation makes it possible to calculate the relative absorption for any

given case. It is easy then to determine I_ℓ^0 for spectral lines emitted by an inhomogeneous source. The values of the relative absorption obtained for spectral lines of cadmium and zinc are tabulated. The radial distribution of the relative intensities of some of these lines are given in graphical form. Orig. art. has: 22 formulas, 2 tables, and 5 figures.

SUB CODE: 20/ SUBM DATE: 26Mar65/ ORIG REF: 011/ OTH REF: 005

TURKO, M.N.

Radial nonuniformity of the glowing cloud of an arc. Izv. SO AN SSSR no. 10. Ser. tekh. nauk no. 3:71-78 '65 (MIRA 19:1)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.
Submitted June 26, 1964

TURKO, M.N.; IL'CHENKO, V.N.

Effect of the nature of electrode material on field strength value in an arc. Izv. Sib. otd. AN SSSR no. 10:130-133 '60. (MIRA 13:12)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.
(Electrodes) (Electric arc)

TURKO, M.N.; KORSHAKEVICH, I.I.

Some results of probe studies of an a.c. arc. Izv.Sib.otd.AN SSSR no.5:37-42 '60. (MIRA 13:7)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR.
(Electric arc)

TURKO, M.N.

Distribution of ions in the plasma of an arc discharge. Izv.Sib. otd.AN SSSR no.6:14-22 '61. (MIRA 14:6)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.
(Electric arc)

41239
S/194/62/000/007/118/160
D271/D308

AUTHORS: Turko, M.N., and Il'chenko, V.N.

TITLE: The influence of electrode material on the field strength in the arc

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1962, 56 abstract 7zh377 (In collection: Nekotoryye vopr. emissicn. i molekulyarn. spektroskopii, Krasnoyarsk, 1960, 53 - 61)

TEXT: Electric field strength E in the positive column of an AC arc between various electrodes was studied. The value of E was defined as the slope of the rectilinear part of the graph of interelectrode voltage drop U in the function of arc length, whilst amplitude of the pulse current (I = 6.7 A) and flash duration (7 millisec.) were kept constant. Measurements of electrodes in 12 different metals (Al, Bi, Sn, Pb, Ag, Ni, Cu, Pd, Pt, Cd, Zn, C) have shown that E increases with the ionization potential of the electrode material, U_i. Effective temperature (11000°K) was determined from the slope of rectilinear characteristic lg E = f(U_i). Measure-

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S/194/62/000/007/118/160
D271/D308

The influence of electrode material ...

ments of E with different polarities of electrodes (one of which was of graphite) have shown that E is mainly determined by properties of anode material. [Abstracter's note: Complete translation.]

Card 2/2

S/194/62/000/007/117/160
D271/D308

AUTHORS: Turko, M.N., and Korshakevich, I.I.

TITLE: Some results of probe investigations of AC arcs

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1962, abstract 7zh374 (In collection: Nekotoryye vopr. emission. i molekulyarn. spektroskopii Krasnoyarsk, 1960, 34 - 41)

TEXT: Some properties of AC arcs in air, at atmospheric pressure, were studied using a rotating probe. Langmuir's probe method, when applied to discharges at atmospheric pressure, only permits measurement of plasma potential (by the inflection point on the logarithmic current graph). The probe was made of nichrome wire, 0.12 mm diameter, rotating at 3000 r.p.m. The wire intersected the arc beam at a given instant of time. All measurements were referred to one arbitrarily chosen phase. Potential distribution along the arc column was determined by this method. Both probe and spectral measurements indicate the existence of a positive space charge at both electrodes, i.e. an increase of ion concentration. The value of

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cathode voltage drop (18 V) agrees with that for a DC arc. Anode voltage drop (17 V) requires an additional explanation. Influence of current intensity (up to 20 A) and of electrode material on the diameters of electron and ion beams was also studied; for this purpose, a potential equal to that of the anode or cathode was applied to the rotating probe. In Pt, Pd and Cu the diameter of the electron cloud is much greater than the ion beam diameter, whereas in Al and Zn difference in the diameters is small. This result can be explained by different values of electron diffusion in the radial direction which depends both on the radial distribution of plasma potential and on the concentration of charged particles in the arc column. 11 references. [Abstracter's note: Complete translation.]

Card 2/2

S/200/62/000/012/001/005
D258/D307

AUTHORS: Korshakevich, I.I. and Turko, M.N.

TITLE: Dynamics and structure of the luminescent cloud of an arc discharge

PERIODICAL: Akademiya nauk SSSR, Sibirskoye otdeleniye. Izvestiya, no. 12, 1962, 3-8

TEXT: The authors investigated the development and subsequent behavior of luminescent cloud during discharge and the behavior of anode and cathode spots, in an effort to determine the effects of the polarity and electrode material on (a) the mobility of luminescent clouds and electrode spots, and (b) fluctuations of the interelectrode potential. Each sparking, lasting about 5 m sec, was filmed with the CKC-1 (SKS-1) cine-camera, at 4500-5500 frames/sec. It was found that the clouds reached full size in 0.5 m sec and declined during the second half of the sparking. Constricted regions near the electrodes showed areas of increased brightness. The most characteristic effect was random motion of cathode and anode spots.

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S/200/62/000/012/001/005
D258/D307

Dynamics and structure ...

Two types of discharge were noted, in dependence on the electrode material: (a) for metals of b.p. > 2000°C and heat of evaporation (H) > 60 kcal/g-atom, the cloud was oval, had a low mobility and the anode spot was stationary. The cathode spot rotates around apex of the cone at up to 5 m/sec. (b) For metallic electrodes with a b.p. below 2000°C and H < 60 kcal/g-atom the cloud was in the form of a stream widening towards the anode, and both cloud and electrode spots moved chaotically. Fall of interelectrode potential undergoes random oscillations during sparking, particularly when the cathode spots move rapidly (e.g. with Bi, Pb, Sb, Pt electrodes). No voltage oscillations took place with W, Al, and Co electrodes. Characteristics of the luminescent clouds depend on the electrode shape, being closer to type (a) for conical, and to type (b) for flat electrodes. Behavior and structure of the luminescent cloud between 2 different metallic electrodes is governed by the material of the cathode. There are 4 figures and 1 table.

ASSOCIATION: Krasnoyarskiy institut fiziki Sibirskogo otdeleniya AN SSSR (Krasnoyarsk Institute of Physics of the Siberian Branch of the AS USSR)

Card 2/2

SUBMITTED: January 3, 1962

L 15346-66 EWT(l)/EWP(e)/EWT(m)/ETC(F)/EPF(n)-2/EWG(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)
ACC NR: AP6002013 IJP(c) JD/WW/HM/ SOURCE CODE: UR/0288/65/000/003/0063/0070
JG/AT/WH

AUTHOR: Turko, M. N.; Korshakevich, I. I.

ORG: Institute of Physics, Siberian Department, AN SSSR, Krasnoyarsk (Institut fiziki Sibirskogo otdeleniya AN SSSR)

TITLE: Some characteristics of vaporization of a material from the surface of a probe in an arc

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 3, 1965, 63-70

TOPIC TAGS: plasma physics, plasma discharge, vaporization, phase transition, photometric analysis, spectrographic analysis, PLASMA ARC, SPECTRAL LINE

ABSTRACT: Atoms are introduced into the plasma of an arc by vaporizing a material from the surface of a probe in an attempt to find methods for converting atoms from the solid to the gaseous phase while controlling the quantity of evaporated material without changing the conditions for excitation of the atoms and in this way to determine the basic characteristics of the vaporization process. A half-wave a-c arc

UDC: 537.523.5

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L 15346-66

ACC NR: AP6002013

was generated with a current amplitude of 7 a in 5 msec intervals with a prf of 12.5 cps. The copper electrodes were held 3 mm apart. The spectra were photographed on high speed film and the intensity of the spectral lines was measured by ordinary photometric methods. The probe was a wire 0.2-0.4 mm in diameter. Two types of probes were used: cylindrical probes which intersected the arc throughout its entire cross section, and point probes in which the working surface was an area of approximately 0.3 mm^2, the remaining portion of the wire being protected by an insulating covering of molybdenum glass. The material to be evaporated was either coated on the surface of the probe by electrolysis (iron, cadmium, tin and zinc) or was the material of the probe itself (nichrome, platinum, rhodium, palladium). A schematic diagram of the electrical circuit for the experimental setup is given. The evaporation of the material from the surface of the probe was determined by the potential of the probe with respect to the electrode. Curves are given showing the intensity of spectral lines for various substances as a function of probe current density. These curves are parabolic for the lines of nickel, rhodium, platinum and palladium with a slight distortion at high current densities. The relationship is considerably less pronounced for lines of iron, cadmium and tin. A formula is derived for the energy liberated at the probe by the stream of electrons in terms of the time for the current pulse. Calculations show that this energy varies from 0.7

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ACC NR: AP6002013

to 95 joules/cm^2. For most of the materials studied, this energy was 4.6±0.7 joules/cm^2 at a capacitance of 58 μf and a voltage of 50 v. The intensity of the lines either increases at a slower rate than the energy (Cd, Sn, Fe, Ni), or surpasses the energy (Td, Rh, Pt). The proposed method for controlled vaporization of a material from the surface of a probe expands the possibilities for studying processes which take place on electrodes in an arc plasma and may be used in theory for other forms of discharges. Orig. art. has: 5 figures, 1 table, 7 formulas.

SUB CODE: 20/ SUBM DATE: 25Feb63/ ORIG REF: 005/ OTH REF: 005

OC

Card 3/3

L 14007-66 EWT(l)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT
ACC NR: AP6002014 SOURCE CODE: UR/0288/65/000/003/0071/0078

AUTHOR: Turko, M. N.

ORG: Institute of Physics, Siberian Branch, AN SSSR (Institut fiziki Sibirskogo otdeleniya AN SSSR)

TITLE: Radial nonuniformity of arc luminescent halo

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 3, 1965, 71-78

TOPIC TAGS: electric arc, plasma arc

ABSTRACT: It is suggested that the functions of temperature T(r), atom concentration $n_a(r)$, and ion concentration $n_i(r)$ determine the shape of radial distributions of most plasma parameters; this shape can be found in a simple way from an observable distribution of intensities of spectral lines. For the atoms that have medium-to-high ionization potential and the arc between metal electrodes with small currents, these radial distributions are considered: $T = \frac{T_0}{1 + a \cdot r^2}$, where $n_a = n_{a0} \cdot \exp(-\beta_a \cdot r^2)$, $n_i = n_{i0} \cdot \exp(-\beta_i r^2)$,

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L 14007-66
ACC NR: AP6002014

0

α, β_α, and β_i are the coefficients characterizing the distributions. The above formulas can be used to describe many distributions, both experimental and theoretical, published in special literature; some of this data is tabulated. The distributions of current concentration and arc power are described by these functions: $N_{el}(r) = N_{el}(0) \cdot \exp(-\Gamma \cdot r^2)$, $W(r) = W_0 \cdot \exp(-8\alpha r^2)$. Experimental data on the luminescent halo of an activated 3-amp a-c arc in air is reported; copper electrodes were used; small quantities of Cd, Zn, Pb, Be, Mg were introduced into the arc, and the radial distributions and intensities of spectral lines were determined. Orig. art. has: 3 figures, 37 formulas, and 2 tables.

SUB CODE: 09 / SUBM DATE: 26Jun64 / ORIG REF: 012 / OTH REF: 013

Card 2/2 BC

SILAYENKOV, Ye., inzh.; TURKO, R., inzh.; GRISHKO, N., inzh.

Finishing panels of exterior walls made of cellular concretes.
Na stroi. Ros. no.10:33-34 O '61. (MIRA 14:11)
(Concrete walls)
(Lightweight concrete)

SILAYENKOV, Yevgeniy Semenovich, kand. tekhn. nauk; GRISHKO, Nikolay Moiseyevich; TURKO, Rakhmil' Leybovich

[Finishing cellular concrete panels with stone grinding materials; practices of the Construction Research Institute of Sverdlovsk and the First Ural Combine for Reinforced Concrete Products and Elements of the "Ural Administration for Heavy Pipe Mill Construction" Trust] Otdelka panelei iz iacheistogo betona kamennymi drobleniymi materialami; opyt NII po stroitel'stvu v g. Sverdlovske i Pervoural'skogo kombinata zhelezobetonnykh izdelii i konstruktsii tresta "Uraltiazhtrubstroi." Moskva, Gosstroiizdat, 1963. 25 p. (MIRA 17:9)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Rukovoditel' sektora krupnopanel'nogo stroitel'stva Nauchno-issledovatel'skogo instituta po stroitel'stvu v gorode Sverdlovske (for Silayenkov). 3. Glavnyy tekhnolog sektora krupnopanel'nogo stroitel'stva Nauchno-issledovatel'skogo instituta po stroitel'stvu v gorode Sverdlovske (for Grishko). 4. Direktor Pervoural'skogo kombinata zhelezobetonnykh izdeliy i konstruktsiy tresta "Uraltyazhtrubstroy" (for Turko).

HANCIK, Josef, inz.; TURKO, Vaclav, inz.

A portable telephonometer. Sdel tech 10 no.2:60-61 F '62.

TURKO, Vaclav, inz.

Some observations on clearness of telephone transmissions. Sdel tech 9 no.9:350-351 S '61.

Z/014/62/000/002/002/003
E192/E382

AUTHORS: Hančík, Josef, and Turko, Václav, Engineers

TITLE: Portable telephonometer

PERIODICAL: Sdělovací technika, no. 2, 1962, 60 - 61

TEXT: The equipment described is housed in a portable cabinet, 275 x 205 x 115 mm in size and 6.5 kg in weight). The effect of the human voice is imitated by means of a noise generator and when testing microphones the noise is reproduced by an artificial mouth; the signal from the noise generator is applied to the tested telephone set when measuring the receivers. The acoustical signal from the measured receiver is applied to an artificial ear and, after suitable amplification, it is applied to the input of a relative attenuation meter. The electronic part of the instrument is constructed as printed circuits and is based on transistors. The system is illustrated diagrammatically in Fig. 3, where UU is the artificial ear, ZUU is the amplifier of the artificial ear, GŠ is the noise-generator, ZUŪ is the amplifier of the

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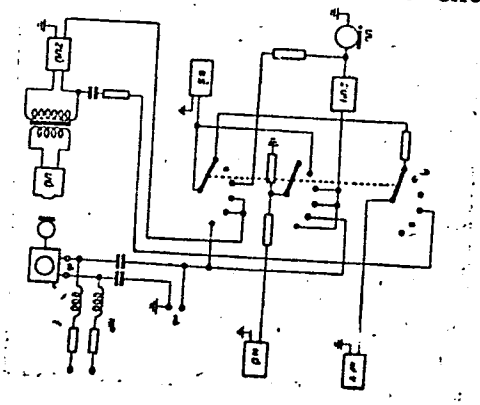
artificial mouth, UÚ is the artificial mouth, nf V is a low-frequency voltmeter, MÚ is the relative attenuation meter, NP is the supply bridge, P_1 is a six-way switch, mb are the terminals for connecting a telephone set of the local-battery type and ub are the terminals for connecting a central-battery telephone set. The artificial ear is permanently built into the cabinet and it is covered by a special lid when not in use. The noise-generator is based on a germanium junction diode which is followed by a 5-stage transistor amplifier. The artificial mouth has an input aperture of 2.5 cm and an external diameter of 10 cm. The source of sound in the artificial mouth is a loudspeaker, type ARO 131. The frequency of the artificial mouth over the bandwidth ranging from 230 - 4 000 c.p.s. does not vary by more than $\pm$ 4 db. The artificial ear is of the type recommended by CCITT. The amplifier of the artificial mouth is based on 3 transistors, the first of which operates as a pre-amplifier, the remaining two being connected as a push-pull output stage; the amplifier of the artificial ear is a 4-stage system with resistive inter-stage coupling. The relative

Portable telephonometer

Z/014/62/000/002/002/003
E192/E382

attenuation meter comprises two amplifier stages and a circuit for the evaluation of the relative attenuation, which is based on copper-oxide rectifiers and resistors. The above telephonometer is primarily designed for servicing and maintenance of telephone sets. The equipment is supplied from two batteries, giving 4.5 and 8 to 9 V.
There are 4 figures and 4 Soviet-bloc references.

Fig. 3:



Card 3/3

S/274/63/000/002/004/019
A055/A126

AUTHORS: Gorgolewski, S., Hanasz, J., Iwaniszewski, H., Turło, Z.

TITLE: Logarithmic-periodical antennas

PERIODICAL: Referativnyy zhurnal, Radiotekhnika i Elektrosvyaz', no. 2, 1963, 35, abstract 2A211 (Postępy astron., 1962, v. 10, no. 2, 143 - 145; Polish)

TEXT: The application of logarithmic-periodical antennas to an interferometer consisting of two antennas in the range of from 100 to 1,000 Mc with a 26-m base is described. The standing wave ratio is equal to 1.62 for 127 Mc and to 1.16 for 127 Mc. The advantages of the interferometer in the observation of the Sun at a 100° -angle of visibility are pointed out. There are 2 references.

I.D.

[Abstracter's note: Complete translation]

Card 1/1

GORGOLEWSKI, S.; HANASZ, J.; IWANISZEWSKI, H.; TURLO, Z.

The 127 Mc/s solar radio emission in the year 1959. Acta astronom 12 no.1:75-83 '62.

1. Astronomical Observatory, Nicholas Copernicus University, Torun, and Institute of Astronomy of the Polish Academy of Sciences, Torun.

TURKOT, A.M., inzh.

Protection from single-phase shortcircuits in substations without cutouts at the high voltage end. Elek.sta. 34 no.2:87-88 F '63. (MIRA 16:4)

(Electric substations)

KRIVORUCHKO, N.Z., kand.tekhn.nauk (g.Khabarovsk); TURKOV, A.I., inzh. (g.Khabarovsk)

Mobile maintenance shop for technical inspection points. Zhel.dor. transp. 43 no.4:74 Ap '61. (MIRA 14:3)
(Railroads—Maintenance and repair)

TURKOV, A.I., aspirant

Ultrasonic flaw detection of car axles with untreated soiled surface. Trudy Khab. IIT no.16:32-47 '64 (MIRA 18:2)

Statistical study of interference in the ultrasonic inspection of the advance parts of the axles of car wheel pairs. Ibid.: 48-64

ROYTMAN, M.Ya.; TURKOV, A.S.; SKITEV, N.T.; PIVOVAROV, A.S.

Some problems of fire prevention in the enterprises of chemical industries. Pozh. bezop. no.4:4-23 '65. (MIRA 19:1)

L 04698-67 EWT(1) JT-2/GW

ACC NR: AP6029216 SOURCE CODE: UR/0095/66/000/008/0031/0032

AUTHOR: Vasov, O. F.; Turkot, I. A.

ORG: [Vasov] Technical Administration of the Ministry of Construction UzSSR, Tashkent (Tekhnicheskoye upravleniye Ministerstva stroitel'stva UzSSR); [Turkot] Uzgiprokommungaz, Tashkent

TITLE: Seismic resistance of the gas network of Tashkent

SOURCE: Stroitel'stvo truboprovodov, no. 8, 1966, 31-32

TOPIC TAGS: earthquakeproof construction, gas pipeline, seismic resistance, Tashkent earthquake, utility line construction

ABSTRACT: The series of earthquakes (intensity 2-8) that struck Tashkent in the period from 26 April through May caused the greatest damage to the older structures in the city that had been built before the introduction of earthquakeproofing techniques. The modern buildings and utility pipelines, especially the gas pipelines, escaped with relatively little damage.

The Tashkent gas network was built in the period since 1959 by the Uzgiprokommungaz Institute following Construction Regulation SN-8-57 for water and sewer pipelines. This regulation allowed for a considerable degree of elastic deformation. A subsequent regulation for such construction projects in seismically active regions, SNiP [Construction Norms and

UDC: 621.643:669.841

Card 1/2

L 04698-67

ACC NR: AP6029216

Regulations] II-G 13-62, issued in 1963, called for thicker walls for underground pipes. Since this was found to substantially lessen pipe resistance to seismic tremors, the regulation was subsequently rescinded. None of the gas lines in Uzbekistan were built with extra-thick pipe walls.

During the series of quakes, not a single break occurred in the surface or underground gas lines. Water lines suffered some damage. Asbestos-cement and cast-iron pipes were most vulnerable to the tremors. The damage that did occur in steel pipes was found to have been in spots previously weakened by electrochemical corrosion. The successful survival of the Tashkent gas lines will be taken into account in future construction. Orig. art. has: 3 figures. [ATD PRESS: 5057-F]

SUB CODE: 08, 13 / SUBM DATE: none

Card 2/2 fv

L 05895-67 EWT(m)

ACC NR: AR6031251 (A) SOURCE CODE: UR/0081/66/000/011/M026/ M026

AUTHOR: Kravchenko, I. V.; Vlasova, M. T.; Yudovich, B. E.; Krykhtin, G. S.; Kirillov, Yu. D.; Turkot, I. M.; Shorokh, L. N.; Bugaychuk, A. V.

TITLE: The production of a quick-hardening cement at a Zdolbunov Cement-Slate Plant

15 20 B

SOURCE: Ref. zh. Khimiya, Part II, Abs. 11M192

REF SOURCE: Nauchn. soobshch. Gos. Vses. n.-i. in-t tsementn. prom-sti, no. 20(51), 1965, 36-41

TOPIC TAGS: cement, quick hardening cement/Zdolbunovskiy Cement Slate Plant

ABSTRACT: A technology was developed for manufacturing very quick-hardening cement with a hardening strength of 300 kg/cm^2 after one day, 450 kg/cm^2 after three days, and 700 kg/cm^2 after 28 days. At the Zdolbunov Cement-Slate Plant the base mixture is made from hard chalk, clay, and loams, containing a considerable quantity of large-crystal quartz; calcining was conducted in rotating furnaces, 118 and 170 m long. The physicochemical properties of the base components were studied, and the effect of the following factors on the cement strength was analyzed:

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L 05895-67
~~L 05895-67~~
ACC NR: AR6031251

the type of fuel, the method of grinding the clinker, and the reactivity of the components. The reactivity of the base mixtures was found to be low, since 30--45% SiO_2 was present in the form of quartz particles larger than 15 μ. The cross-sectional view of the manufactured slurry showed large quartz crystals, $\leqslant 250\,\mu$. The best results with respect to cement strength and furnace productivity were obtained with clinkers containing 55—63% C_3S and 7—8% C_3A when n = 2.3—26, and p = 1.2—1.4. The required cement strength was obtained when the specific 3500--4000 cm^2/g, while the specific surface should be 5000 cm^2/g when calcining the clinker in a solid fuel. Mills, operating in open or closed cycles can be used: the temperature of the clinker being fed into the mill should not exceed 70—80° in the first case and 100° in the second case, and 100° at the outlet from the mill. [Translation of abstract]

SUB CODE: 07/

kh

Card 2/2

TURKOT, I.M., inzh.

Technology of the industrial production of specially fast hardening cement. TSement 31 no.1:14-15 Ja-F '65. (MIRA 18:4)

1. Zdolbunovskiy tsementno-shifernyy kombinat.

SOZANSKIY, S.G.; TURKOT, I.M.; SHIMKARENKO, O.G.

Laying grooved linings in rotary kilns. TSement 26 no.2:20-21 Mr-Ap '60. (MIRA 13:6)

(Kilns, Rotary)

TURKOV, G. (Kursk)

Modernizing machines and equipment. Vop.ekon. no.1:122-124 Ja '59. (MIRA 12:1)
(Kursk Province--Machinery in industry)

TURKOV, G.

Simplification of the method for defining auxiliary time. (MLRA 10:9)
Sots.trud no.9:94-97 S '57.
(Metalwork--Production standards)

TURKOV, G.A.

In the enterprises of the Kursk Economic Council. Izobr. i rats. no.6:39-40 Je '58. (MIRA 11:9)
(Kursk--Efficiency, Industrial)

TURKOV, G.A.

Mechanization and automation of assembly work in the manufacture of machinery. Mashinostroitel' no.5:2-3 My '65. (MIRA 18:5)

TURKOV, G.A.

KITAYTSEV, G.P. inzhener [deceased]; KOSOROTOV, I.V., inzhener; TULIAYEV, N.P., inzhener; FRUMKIN, F.D., inzhener; YAKOVLEV, V.N., inzhener, redaktor; TURKOV, G.A., inzhener, redaktor; TIKHANOV, A.Ya., tekhnicheskiy redaktor

[Assembling machine tools; a concise reference manual] Montazh metallorezhushchego oborudovaniia; kratkoe spravochnoe posobie. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 123 p. (MLRA 10:3)

(Machine tools)

Turkov, G.A.

TURKOV, G.A.

Simplified determination of auxiliary time in establishing norms for machine-tool operations. Stan.i instr. 29 no.1: 27-28 Ja '58. (MIRA 11:1)
(Labor productivity)

TURKOV, G.A., inzh.

Automation of the production of knitting and shoe needles. (MIRA 14:11)
Mekh.i avtom.proizv. 15 no.11:18-21 N '61.
(Pins and needles)

TURKOV, G.A., STREKALOV, G.N.

Welding equipment in England. Biul.tekh.-ekon.inform. no.1: 88-92 '62. (MIRA 15:2)
(Great Britain--Welding--Equipment and supplies)

TURKOV, G.A.; FEDOROV, A.A.

Development of the machinery industry in the Far East. Sbor.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 18 no.12-10 Ja '65. (MIRA 18:4)

TURKOV, G.A., inzh.

Overall mechanization in the machinery industry. Mekh. i avtom. proizv. 19 no.7:1-4 Jl '65. (MIRA 18:9)

Card 1/2

ASSOCIATION: none

Card 2/2

S/118/62/000/001/001/005
D221/D301

AUTHOR: Turkov, G.A., Engineer

TITLE: An automatic line for machining gears

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 1, 1962, 4-6

TEXT. The Tsentral'noye proyektno-konstruktorskoye tekhnologicheskoye byuro Mosoblsovnarkhoza (Central Technological Project and Design Office of Mosoblsovnarkhoz) designed an automatic line for machining gears for the Klimovsk engineering plant. They employed 13 machine tools and 21 workers for manufacturing cast iron gears. The automatic line increases the production by 78%. The line consists of 11 standard units linked by automatic handling equipment, and caters for 6 types and sizes of gears. The yearly two-shift production amounts to 118,000 pieces. The line contains four 1П734 (1P734) automatic devices, one 7Б705В (7B705V) broaching machine, and six gear cutters of the 5312 type. Three operators are required. At the ends of the line as well as at contact points, transfer

Card 1/3

An automatic line ...

units and accumulators are placed which enable independent operation of each sector. Pneumatic chucks are replaced by a hydraulic unit for more reliable clamping. The gear cutters are linked by a step-conveyor. The component is rotated between the operations by a special device built into the conveyor. In addition to the longitudinal conveyor and two rotating mechanisms, each machine is equipped with a transversal conveyor for loading and unloading. The vertical broaching machine, designed by the Minskiy zavod im. Kirova (Minsk factory im. Kirov), has a transfer mechanism, automatic loader and hydraulic clamping of the broache. The components are brought from the lathe sector by a flag of the conveyor and then taken away in a similar manner towards the gear cutters, the loaders pick them up for placing on adaptors. The workpiece of the broaching machine is removed on the return stroke of tool by the [illegible] piece. The clamping and release of the tool is secured by limit switches. The gear cutters were manufactured by the Vitebskiy zavod im. Komintern (Vitebsk factory im. Komintern). They are equipped with hydraulic clamps which is provided with three prongs for unloading. Automatic switching

Card 2/3

of the transversal conveyors is ensured by a cam system. The [illegible] mechanism and accumulators are placed at the ends of the line and [illegible] three junction points. Their capacity is 60 components i.e. 1 work[illegible] hour. A diagram of the accumulator is given with explanations. [illegible] of the automatic line would increase the efficiency of operators by [illegible] further advantages are the reduction of the number of workers and spare[illegible]. The annual savings are estimated at 18,200 roubles.

TURKOV, G.A., inzh.

Automatic line for machining pinions. Mekh. i avtom.proizv. 16 no.1:4-6 Ja '62. (MIRA 15:1)
(Gear-cutting machines)

TURKOV, G.A.

Development and introduction of complex technological processes in the machinery industry. Biul.tekh.-ekon.inform. Gos.nauch. issl.inst.nauch. i tekh.inform. 16 no.5:67-68 '63. (MIRA 16:7)
(Machinery industry)

MOLOKANOV, N.M., inzh.; TURKOV, K.I., inzh.

Combating landslides on the Volga Slope. Transp. stroi. 8 no. 7:16-18 Jl '58. (MIRA 11:7)

(Volga Valley--Landslides)
(Railroads--Earthwork)

STRAKHOV, Aleksey Petrovich; OGURTSOVSKIY, B.A., redaktor; DOLGIY, A.G., retsenzent; TURKOV, N.M., retsenzent; SHLENNIKOVA, Z.V., redaktor; BEGICHEVA, M.N., tekhnicheskiy redaktor.

[Principles of theory and structure of inland navigation vessels] Osnovy teorii i ustroistva sudov vnutrennego plavaniia. Moskva, Izd-vo "Rechnoi transport," 1955. 334 p. (MIRA 8:4)

(Naval architecture)

AVROV, P.Ya.; BULEKBAYEV, Z.Ye.; TURKOV, O.S.

Geological prerequisites of increasing the petroleum recovery from the oil fields in the Southern Emba area. Izv. AN Kazakh. SSR. Ser. geol. 22 no.4:18-22 Jl-Ag '65. (MIRA 18:9)

1. Institut geologicheskikh nauk im. K.I.Satpayeva, g. Alma-Ata, i trest "Aktyubnefterazvedka", g. Aktyubinsk.

TURKOV, S.K.; SHERMERGOR, T.D.

Internal friction in the interaction between impurity atoms and edge dislocations. Fiz. tver. tela 6 no.12:3502-3508 D '64
(MIRA 18:2)

1. Voronezhskiy politekhnicheskiy institut.

L 3344-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG/GG

ACCESSION NR: AP5017299 UR/0181/65/007/007/2064/2069

AUTHORS: Turkov, S. K.; Shermergor, T. D.

TITLE: Internal friction in a face-centered cubic lattice, due to reorientation of bivacancies

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2064-2069

TOPIC TAGS: internal friction, crystal lattice structure, crystal vacancy

ABSTRACT: The purpose of the paper was to calculate theoretically the internal friction produced by the reorientation of bivacancies in an external field, and to investigate the peculiarities of the internal-friction peak produced by these bivacancies. The authors determine the kinetics of the internal friction due to the change in the concentration of the bivacancies having a specified orientation under the influence of applied external stresses. Is is shown that the width of the bivacancy internal-friction peak depends essentially on the orientation of the crystallographic axes relative to the ap-

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L 3344-66

ACCESSION NR: AP5017299

plied stress. The amount of lattice distortion is calculated to estimate the magnitude of the relaxation peak. It is shown that the reorientation of the bivacancies is characterized in general by two relaxation times, differing by a factor of approximately 1.5. The results are compared with experiment for copper, silver, and gold. It is concluded that to reconcile the experimental and theoretical data it is necessary to assume that during the quenching an appreciable part of the vacancies condenses into bivacancies. Orig. art. has: 20 formulas and 1 table.

ASSOCIATION: Voronezhskiy politekhnicheskiy institut (Voronezh Polytechnic Institute)

SUBMITTED: 18Jan65 ENCL: 00 SUB CODE: SS

NR REF SOV: 000 OTHER: 006

Card 2/2 DP

L 17117-65 EWT(m)/EWP(b)/EWP(t) SSD/ASD(m)-3/AFWL JD
ACCESSION NR: AP5000643 S/0181/64/006/012/3502/3508

AUTHOR: Turkov, S K.; Shermergor, T. D.

TITLE: Internal friction in the interaction between impurity atoms and edge dislocations

SOURCE: Fizika tverdogo tela, v. 6, no. 12, 1964, 3502-3508

TOPIC TAGS: dislocation study, dislocation motion, internal friction, impurity movement, edge dislocation

ABSTRACT: The authors calculate the internal friction due to the diffusion of impurity atoms in the stress field of an edge dislocation that executes harmonic oscillations in the slip plane under the influence of an external force. An oscillation amplitude [illegible] tion. The results show that the dependence of the internal friction on the impurity concentration and on the free length of the dislocation is more complicated than obtained by

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L 17117-65
ACCESSION NR: AP5000643

J. O. Kessler (Phys. Rev. v. 106, 654, 1957). At large impurity concentrations the internal friction is inversely proportional to the concentration and does not depend on the free dislocation length. In the case of low concentrations and for high frequencies the results are close to those of Kessler. At very high frequencies, account must be taken of the inertial forces. Orig. art. has: 3 figures and 28 formulas.

ASSOCIATION: Voronezhskiy politekhnicheskiy institute (Voronezh Polytechnic Institute).

SUBMITTED: 21Apr64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 004

Card 2/2

TURKOV, S.K.; SHERMERGOR, T.D.

Effect of the stress tuning on the high-temperature background of internal friction. Fiz. tver. tela 7 no.10:2952-2957 O '65.
(MIRA 18:11)

1. Voronezhskiy politekhnicheskiy institut.

L 26622-66 EWT(1)/EPF(n)-2/ETC(m)-6 IJP(c) WW

ACC NR: AP5025371 SOURCE CODE: UR/0181/65/007/010/2952/2957

AUTHOR: Turkov, S. K.; Shermergor, T. D.

ORG: Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskiy institut)

TITLE: The effect of stress distribution on high-temperature noise due to internal friction

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 2952-2957

TOPIC TAGS: internal friction, metal, stress distribution, crystal vacancy

ABSTRACT: The high temperature element of internal friction of metals represents a series of peaks superposable on a curve growing monotonically with an increase in temperature. The high temperature noise caused by vacancy diffusion between block boundaries or crystal grains was calculated. Unlike the similar Escaig calculation the possibility of stress redistribution caused by the irregularity of diffusion currents is considered. This leads to a considerable increase in noise in the mean frequency ranges. With low frequencies of ω internal friction in both cases $\sim \frac{1}{Q}$, with high frequencies $\sim \frac{1}{\sqrt{\omega}}$. Orig. art. has:

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L 26622-66

ACC NR: AP5025371

2 fig. and 29 formulas.

SUB CODE: 20,11/ SUBM DATE: 12Apr65/ ORIG REF: 005/ OTH REF: 004

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L 41725-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/JW/GG

ACC NR: AP6018524 SOURCE CODE: UR/0181/66/008/006/1670/1676

AUTHOR: Turkov, S. K.; Shermergor, T. D.

ORG: Voronezh Polytechnic Institute (Voronezhskiy politekhnicheskiy institut)

TITLE: Effect of screw dislocations on the internal friction of para-elastic bodies

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1670-1676

TOPIC TAGS: crystal dislocation phenomenon, internal friction, crystal vibration, elasticity theory, elastic modulus, crystal lattice distortion

ABSTRACT: In view of the fact that the mechanism of vibration-dislocation energy dissipation by the elastic-polarization cloud produced in para-elastic bodies, the authors calculate the internal friction due to the deceleration of vibrating screw dislocations by relaxation of their stress fields in a medium possessing properties of a standard linear body. It is assumed that the elastic polarization of the medium is the only effective damping mechanism. The screw dislocations are assumed to vibrate under the influence of periodic external stresses and the amplitudes of their oscillations are considerably smaller than the distances between the oscillation nodes. The relation between the internal friction of this type and the defect of the modulus of the medium or the amplitude of the applied stress is determined and it is shown that the ratio of the height of the dislocation peak to the peak of the dislocation-free body decreases both with increasing defect of the modulus of the medium, and with increasing amplitude of the applied stress. The results are found to be similar to

Card 1/2

L 41725-66

ACC NR: AP6018524

those produced by the interaction between dislocations and Cottrell atmospheres. The dislocation internal friction is estimated to exceed by a factor of approximately six the internal friction of a non-dislocation medium for the case when the distortions of the crystal lattice around the defect responsible for the para-elasticity are small. In the case of strong interaction between the elastic dipoles and the stress field, saturation of elastic polarization will be observed. Orig. art. has: 1 figure and 39 formulas.

SUB CODE: 20/ SUBM DATE: 08Sep65/ ORIG REF: 001/ OTH REF: 006

Card 2/2 af

GOL'DVARG, S., inzh.; TURKO, V. (stantsiya Vozhega)

Possibilities for reducing the amount of time required to wash steam locomotives. Zhel.dor.transp. 36 no.5:62-65 My '55. (MIRA 12:5)

1. Zamestitel' nachal'nika parovoznogo depo Vozhega Severnoy dorogi.
(Locomotives--Maintenance and repair)

ACC NR: AT7002512 SOURCE CODE: UR/0000/66/000/000/0277/0286

AUTHOR: Dishler, V. Ya.; Khvostova, V. V.; Valeva, S. A.; Turkov, V. D.

ORG: Institute of Biological Physics, AN SSSR, Moscow (Institut biologicheskoy fiziki AN SSSR)

TITLE: Mutability of the broad bean Vicia faba under the effect of gamma-rays and chemical agents

SOURCE: AN SSSR. Nauchnyy sovet Radiobiologiya. Vliyaniye ioniziruyushchikh izlucheniy na nasledstvennost' (Effect of ionizing radiation on heredity). Moscow, Izd-vo Nauka, 1966, 277-286

TOPIC TAGS: gamma irradiation, ~~radiation biochemical effect~~, radiation ~~genetic~~ plant effect, radioprotective agent, plant genetics, agriculture crop

ABSTRACT: Small doses (500—1000 r) of γ-rays and low concentrations (0.01%) of ethylenimine proved to be the most effective of the investigated mutagens for producing the greatest number of hereditary changes in the broad bean Vicia faba minor: these agents increased the variability of this plant by 2—2.8 times. Altered morphological characters pertaining to all parts of the plant, bush, leaves, flowers, beans, and seeds, were obtained under the effect of the mutagens. Of economic value were the characteristics produced by polygene factors. The results of the experiment permitted the assumption that the selection of plants with respect to

Card 1/2 UDC: none

ACC NR: AT7002512

such characters is possible. The nature of the occurrence of leaf spottiness in M_1 plants and the question as to what portion of the M_1 plants contains the mutation after treating the dormant seeds are discussed. Orig. art. has: 3 tables and 3 figures. [26]

SUB CODE: 06/ SUBM DATE: 01Sep66/ ORIG REF: 004/ OTH REF: 009
ATD PRESS: 5117

Card 2/2

TURKOV, V.G.

Microclimatic conditions on burned fireweed woodlands of Kamchatka.
Izv. SO AN SSSR no.4 Ser. biol.-med. nauk no.1:29-32 '[illegible].
(MIRA 17:11)

1. Kamchatskaya lesnaya opytnaya stantsiya, Dal'nevostochnogo nauchno-issledovatel'skogo instituta lesnogo khozyaystva.

ACC NR: AP7009665 SOURCE CODE: UR/0386/67/005/004/0133/0135

AUTHOR: Turov, Ye. A.; Timofeyev, A. I.

ORG: Institute of Physics of Metals, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR); Ural State University im. A. M. Gor'kiy (Ural'skiy gosudarstvennyy universitet)

TITLE: Nuclear magnetoacoustic resonance in spin-lattice relaxation in antiferromagnets of the easy plane type

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 5, no. 4, 1967, 133-135

TOPIC TAGS: nuclear magnetic resonance, ultrasonic irradiation, resonance absorption, ultrasound absorption, spin lattice relaxation, muclear spin

ABSTRACT: The authors report results of calculation of the coefficient of resonant absorption of ultrasound (α) at the nuclear magnetic resonance frequency, and of the rate of spin-lattice relaxation ($1/T_1$) of the nuclear spins in antiferromagnets of the easy plane type. It is shown that the essential difference between the formulas derived in the present work and those derived by others for the easy-axis type of antiferromagnets lies in the appearance of a dependence on the exchange-interaction parameter, due in turn to the presence of spin waves with a small energy gap. This makes the values of α and $1/T_1$ approximately 10^4 times larger in easy-plane antiferromagnets than in easy-axis ones. An estimate is also presented for the sound flux

ACC NR: AP7009665

necessary for acoustic saturation of the nuclear spin system. In the case of hematite the value obtained for $1/T_1$ agrees with the published experimental data. A method of observing acoustic NMR by determining the shift of the antiferromagnetic resonance frequency when ultrasound of the NMR frequency is applied to the sample is also discussed. Orig. art. has: 5 formulas.

SUB CODE: 20/ SUBM DATE: 01Dec66/ ORIG REF: 002/ OTH REF: 003

Card 2/2

MIKAELYAN, A.L.; TER-MIKAYELYAN, M.L.; TURKOV, Yu.G.

Calculation of nonsteady processes in lasers. Radiotekh. i elektron. 9 no.10:1788-1799 O '64. (MIRA 17:11)

S/109/60/005/012/028/035
E192/E582

9.4300 (1137, 1155, 1147)

AUTHORS: Mikaelyan, A.L., Vasil'yev, A.A. and Turkov, Yu.G.

TITLE: Influence of Dielectric Characteristics and Size of Ferrites on the Width of the Resonance Curve

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.12, pp. 2055-2056

TEXT: It is known that the half-width ΔH (or $\Delta \omega$) of the resonance curve is a very important parameter in ferrites. The quantity ΔH is principally determined by the magnetic losses in ferrites. However, it is interesting to investigate how ΔH depends on their dielectric parameters. . . . In order to investigate this effect the system shown in the figure is considered. This consists of a cylindrical resonator operating in the $E_{n\,10}$-mode and a coaxial longitudinally magnetized ferrite rod. The characteristic equation for this system is in the form (Ref.1)

$$ak_{\perp}\frac{\mu_0}{\mu_{\perp}}\frac{J_1'(ak_{\perp})}{J_1(ak_{\perp})}+\frac{k}{\mu}\frac{\mu_0}{\mu_{\perp}}=ak_0\frac{C_1'(ak_0)}{C_1(ak_0)}, \quad (1)$$

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Influence of Dielectric Characteristics and Size of Ferrites on the Width of the Resonance Curve

where

$$C_1(ak_o) = J_1(ak_o) - \frac{J_1(bk_o)}{N_1(bk_o)} N_1(ak_o)$$

where a and b are radii of the ferrite rod and the resonator, respectively; μ and k are the components of the tensor of the ferrite permittivity, $\mu_\perp = (\mu^2 - k^2)/\mu$; $k_\perp = \omega\sqrt{\varepsilon\mu_\perp}$; $k_o = \omega\sqrt{\varepsilon_o\mu_o}$. For the case of thin ferrite rods Eq.(1) can be simplified and the following expression is obtained

$$\omega_M + (2 + \beta)(\omega_o - \omega) = 0 \quad . \quad (3)$$

where $\omega_M = 4\pi\gamma M$, $\omega_o = \gamma H_o$. By separating the real and imaginary parts of Eq.(3) an expression for ω'', which represents the attenuation coefficient of the natural oscillations in ferrite, is obtained. Consequently, the width of the resonance curve is

S/109/60/005/012/028/035
E192/E582

Influence of Dielectric Characteristics and Size of Ferrites on the Width of the Resonance Curve

expressed by

$$\Delta H = \frac{\Delta\omega}{\gamma} = -\frac{\omega''}{\gamma} = \frac{\Delta H_o + (ak'_o)^2 \frac{\varepsilon''}{\varepsilon_o} \frac{4\pi M}{16}}{1 + \alpha \frac{\omega_M}{4\omega'} (ak'_o)^2} \qquad (7)$$

where γ is the Euler constant. A numerical example is considered and it is shown on the basis of Eq.(7) that the width of the resonance curve due to the dielectric losses is about 0.165 Oe, which is quite a significant fraction for the ferrites with a narrow resonance curve. There are 1 figure and 2 references: 1 Soviet and 1 non-Soviet.

SUBMITTED: April 21, 1960

Card 3/4

S/109/60/005/012/028/035
E192/E582

Influence of Dielectric Characteristics and Size of Ferrites on the Width of the Resonance Curve

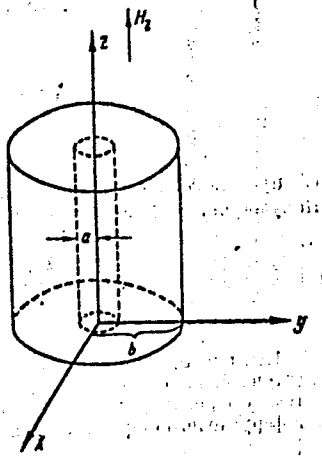

Fig.

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24877
S/109/61/006/007/017/020
D262/D306

9,2571 (1163, 1147)

AUTHORS: Mikaelyan, A.L., Antonʼyants, V.Ya., and Turkov, Yu.G.

TITLE: Effects of coupling between the resonator and the ferrite

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 7, 1961, 1184 - 1193

TEXT: Systems which can be represented as resonators with magnetized ferrites inside them are often used in microwave technique. Such systems can be used as ferrite amplifiers, for the magnetic tuning of resonators, for measuring the ferrite parameters, etc. In the analysis and design of such systems it is usually assumed that the action of the ferrite is restricted to that of varying the resonant frequency and Q of the resonator. This assumption is valid only for cases when the frequency of ferromagnetic resonance differs considerably from the resonant frequency of the cavity itself and when the ferrite exhibits the property of heavy magnetic

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losses. If the above is not the case such system exhibits properties of great practical interest since then the resonator containing the ferrite acts as a system of coupled circuit, one of which is the ferrite and the other the resonant cavity itself. A similar effect can be observed in an acoustical resonant system (ref. 1: P.M. Mors, G. Feshbakh, Metody teoreticheskoy fiziki, II p. 442, IL, 1960). The authors present in the present article the results of theoretical and experimental analysis of the behavior of a resonator containing magnetized ferrite. It is shown that the resonator and a small ferrite sample placed inside it behave like a coupled circuit with two resonant frequencies - frequencies of coupling. One degree of coupling is determined primarily by the ratio of volumes of ferrite and of resonator

$$\omega_{1,2} = \frac{1}{2}\left\{\omega_r + \omega_f \pm \sqrt{(\omega_r - \omega_f)^2 + 2\omega_r\omega_M \frac{I_f}{I_r}}\right\}. \qquad (9)$$

In it ω_r - resonant frequency of resonator alone, ω_f - frequency of ferromagnetic resonance; $\omega_M = \mu_o \gamma M_o$ where M_o the external mag-

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netizing field [Abstractor's note: Not defined], I_f and I_r are determined by

$$I_f = \int_{V_f} \mu_o [/H_{rx}/^2 + /H_{ry}/^2 + j(H_{ry}H^*_{rx} - H_{rx}H_{ry})]\, dv; \qquad (7)$$

$$I_r = \int_{V_r} (\mu_o \vec{H}\, \vec{H}^*_r + \varepsilon_o \vec{E}\, \vec{E}^*_r) dv$$

since the resonator has many resonant frequencies ω_{rn}, the above phenomenon will be observed near any of these frequencies, the degree of coupling between the ferrite and the resonator being determined by the field structure, corresponding to the frequency and type of the wave. Not only the homogeneous precession, but also other types of magneto-static oscillations are shown to be related to the resonant frequencies of resonator. This is shown

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in Fig. 7, in which the resonator frequency is related to one of the higher modes of oscillations of ferrite. The analysis of this phenomenon may be done using

$$\frac{\omega - \omega_r}{\omega_r} = - \frac{\int_{V_f} \mu_0 \vec{M} \vec{H}_r^* dv + \int_{V_f} (\varepsilon - \varepsilon_0) \vec{E} \vec{E}_r^* dv}{\int_{V_r} (\mu_0 \vec{H} \vec{H}_r^* + \varepsilon_0 \vec{E} \vec{E}_r^*) dv}, \qquad (1)$$

where $\vec{H}_r$, $\vec{E}_r$ - magnetic and electric fields respectively in empty resonator; $\vec{H}$ and $\vec{E}$ - the respective fields in the resonator exited by ferrite; M - magnetization of ferrite; ε - specific inductive capacitance of ferrite; V_f and V_r - the volume of ferrite and of resonator respectively. For a ferrite sample in the shape of an ellipsoid with the symmetry axis, the transverse components of magnetization $\vec{M}$ are related with the external alternating field components H_r by

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$$M_x = \frac{\chi^e}{u_o} H_{rx} - j \frac{k^e}{u_o} H_{ry}, \qquad M_y = j \frac{k^e}{u_o} H_{rx} + \frac{\chi^e}{u_o} H_{ry}, \qquad (2)$$

where χ^e and k^e are the components of the tensor of "external" susceptibility of ferrite. In using Eq. (1) instead of Eq. (2) formulae of P.C. Fletcher and R.O. Bell (Ref. 2: Ferromagnetic resonance modes in spheres, J. Appl. Phys. 1959, 305, 687) should rather be used, relating the magnetization and the field for a given type of oscillation in the ferrite. The resonance curve of the system ferrite resonator in terms of the magnetic field values may differ considerably from that of ferrite in free space. Its width $2\delta H$ depends not only on magnetic losses of ferrite, but also on other parameters of the system. This fact leads to the need for working at frequencies remote from the resonant frequency of the resonator. The evaluation of coupled systems of the ferrite resonator can be also carried out using the method of A.L. Mikaelyan (Ref. 3: Nelineynaya teoriya ferritovykh generatorov, Radiotekhnika

Effects of coupling ...

i elektronika, 1960, 5, 1, 46). Besides the interaction between the sample and resonator, the interaction between two (or more) ferrite samples is possible, which can be determined again experimentally. The phenomenon observed in the present experiment can be used for setting up various microwave systems. It may be seen that the dependence of frequency on magnetizing field is most pronounced close to the region where the frequency of ferromagnetic resonance is near that of the resonator itself, so that a considerable tuning range is possible with only small changes of the magnetizing field. A coupling resonator ferrite system can also be used as a tuned filter, with the frequency band depending on the number of ferrite samples within the resonator. Such a system can also be used as a fast acting switch. The authors acknowledge the help of A.A. Pistol'kors. There are 7 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: P.C. Fletcher, R.O. Bell, Ferromagnetic resonance modes in spheres, J. Appl. Phys., 1959, 30, 5, 687.

SUBMITTED: July 26, 1960

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MIKAELYAN, A. L.; TURKOV, Yu. G .;

"On the Theory of Q-Spoiled LASER,"

"On the Theory of Optical Generators with Accumulating Operation."

Report presented at the 6th Canadian Electronics Conference, Toronto, Canada, 30 Sep-2 Oct 63.

L 10269-63 EWA(k)/EWT(l)/EWP(q)/EWT(m)/FBD/BDS/T-2/3W2/EEC(b)-2/ES(t)-2--
AFFTC/ASD/ESD-3/RADC/AFWL--JHB/WH/WG/IJP(C)/K/EH S/0109/63/008/005/0731/0758
ACCESSION NR: AP3000555

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AUTHOR: Mikaelyan, A. L.; Turkov, Yu. G.

TITLE: Coherent optical-range oscillators

SOURCE: Radiotekhnika i elektronika, v. 8, no. 5, 1963, 731-758

TOPIC TAGS: laser quantum oscillator

25

ABSTRACT: A review of modern publications (95% of them from USA) on lasers is offered. Principles of operation, resonators, major components, and parameters of the ruby laser are discussed in some detail. The following trends in laser development are noted: 1) increased efficiency and output; 2) increased pulse-repetition frequency; 3) development of very high power short pulses, and 4) development of a continuously operating laser. The high-power energy-storage type of ruby laser is described, as well as lasers based on crystals with uranium and neodymium impurities, those based on other rare-earth elements, and glass-type lasers. Principles of operation, construction, and parameters of the gas laser are also given. Data on various lasers including material, concentration, type of transition, wavelength, is presented in 2 tables. Orig. art. has: 34 equations, 27 figures, and 2 tables.

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MIKAELYAN, A.L.; TURKOV, Yu.G.

Theory of a laser in storage operation. Radiotekh. i elektron. 9 no.4:743-747 Ap '64. (MIRA 17:7)

TITLE: [illegible]

SOURCE: Radiotekhnika [illegible]

TOPIC [illegible] laser, [illegible] laser, [illegible]
Laser, traveling wave laser

[illegible] A [illegible]-wave laser analysis is presented in terms of general [illegible] [illegible] [illegible]

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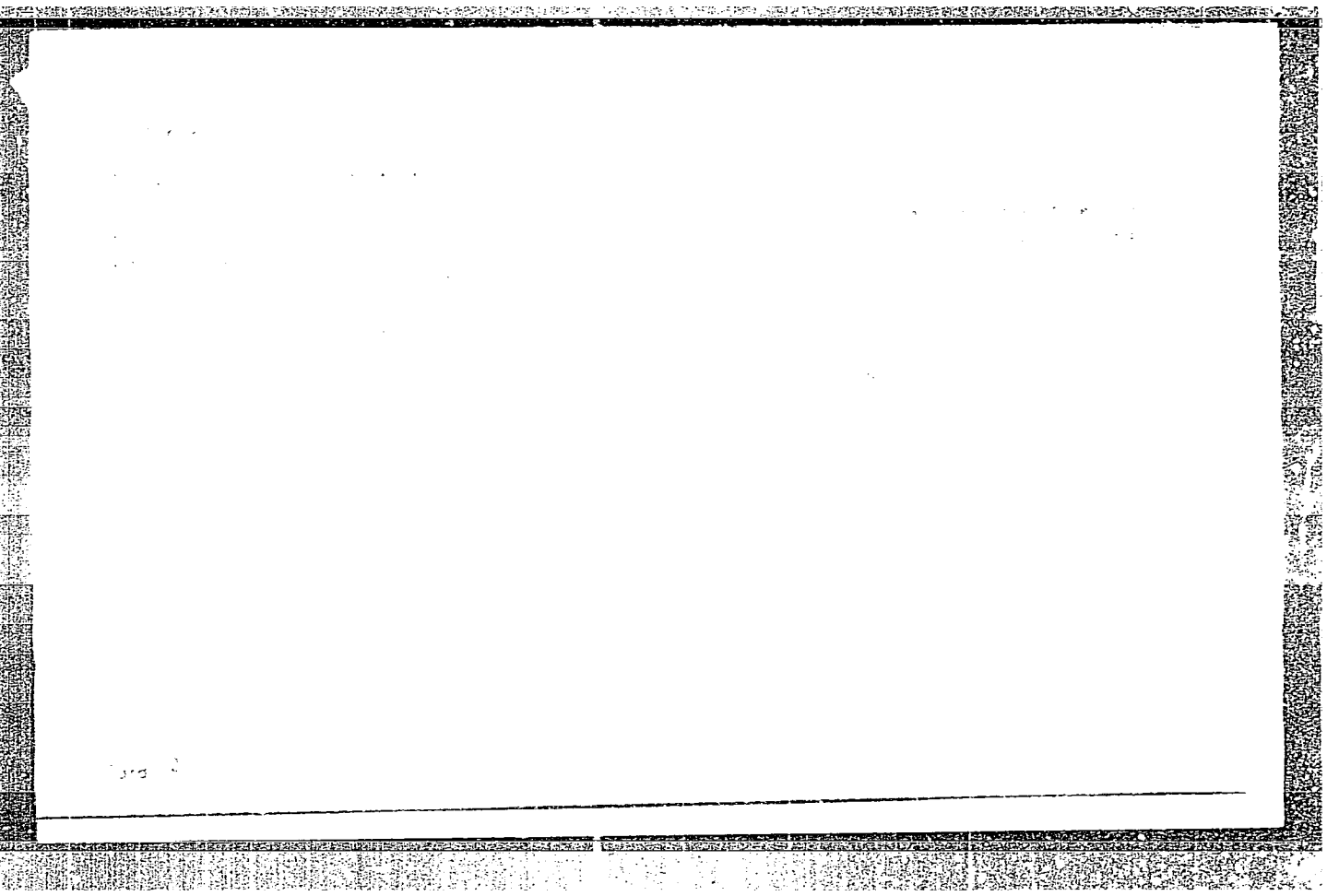

AUTHOR: Mikaelyan, A. L. [illegible] Turkov, Yu. G.

TITLE: Experimental investigation of ruby laser energy characteristics

SOURCE: Radiotekhnika i elektronika, v. 9, no. 8, 1964, 1542-1545

TOPIC TAGS: laser, ruby laser, xenon flash lamp, pumping energy, laser output energy, transmission coefficient, laser efficiency

ABSTRACT: The lasers used in this experiment consisted of a ruby rod and a linear xenon flash lamp placed side by side in a polished oval reflector. The investigated ruby specimens were 60, 80, and 120 mm long and 6 to 12 mm in diameter. The optical axes of all specimens were perpendicular to the axis of the rod. The working interval of the pumping lamps was 80 and 120 mm, and their inside diameter was 6.4 mm. Flat dielectric mirrors placed at a distance of 10—20 cm from the ruby were used as cavity resonators. Relatively low pumping levels (up to 1000—1200 joules), which make it possible to produce

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lasers operating under periodic regimes, were utilized during the investigation. The following conclusions were reached: 1) mirror misalignment within 15—20" has virtually no effect on the value of the re-
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ASSOCIATION: none

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